
Environmental Statistics ♦ April 2009

Tightening the Tap on Household Water Use in B.C.

Having enough water to meet present and future needs is a growing concern among many Canadian communities. Expanding populations, the increasing demand for water (both locally and globally), and the anticipated impacts of climate change further intensify such apprehensions. In 2008, 84% of Canadians surveyed were concerned about the availability and quality of water in the long term and most (53%) consider freshwater to be the nation's most important natural resource.¹ As the warmer seasons approach, water availability and quality may again become more of a primary concern for many regions of the country, including parts of British Columbia. Regulated water restrictions and the safety of drinking water often become hot topics in warmer drought-prone months in many parts of the province. In 2004, 72 of 510 responding Canadian municipalities (14.1%) indicated that they experienced water shortages.² In certain locations where weather-influenced water supply may be less of a concern, municipalities can incur increased water treatment costs as demands for water grow with the expansion of cities and increasing populations.

As utilities prices climb,³ householders are naturally more financially conscious of the resources they consume and, as a result—coupled with an increased environmental awareness—many are making an effort to conserve water use. Daily activities around the home involve a considerable amount of water. In 2004, 66% of BC's water use was from the residential sector, considerably higher than the national average (56%). It is estimated that in that same year, the average individual in British Columbia consumed 426 litres of water per day, substantially more than the national average (329 litres).⁴

Many resource-conscious households install devices inside and outside the home as well as employ other water conservation tactics to help curtail water usage and cost. Indoor household water conservation strategies, such as using low-flow shower heads,⁵ low-volume toilets⁶ and curbing overuse of water, are some of the

¹ Ipsos Reid. 2009 *Canadian Water Attitudes Survey*.

² Environment Canada, 2008. *2007 Municipal Water Use Report*. Available at:
ec.gc.ca/water/en/info/pubs/ssss/e_mun2004.htm

³ Prices in British Columbia for water (+80.5%), natural gas (+114.8%) and heating oil (+179.2%) all exhibited higher inflation between 1998 and 2008 than the economy as a whole (+20.2% over the same period). Statistics Canada, Consumer Price Index.

⁴ Environment Canada, 2007, *Municipal Water Use Report: 2004 Municipal Water Use Statistics*:
ec.gc.ca/WATER/en/info/pubs/ssss/e_mun2004.pdf

⁵ A low-flow shower head is any shower head that reduces the water flow.

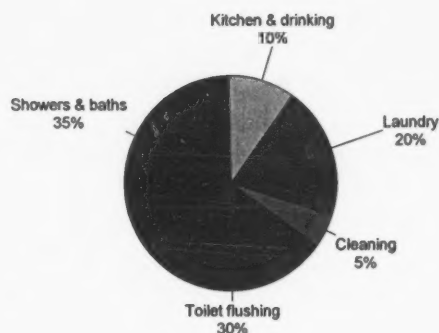
⁶ A reduced volume toilet is a water-saving, low volume toilet or modified toilet tank including toilets specifically designed to use less water per flush.

most common water-saving practices that individuals can use to reduce the volume of water used at home. Outside, householders can turn to other water-saving methods, like timed sprinkler systems and informed watering habits.

Indoor water conservation

A prime area to target in indoor water conservation is the bathroom, as it is here that 65% of all indoor water use occurs.⁷

Shares of indoor household water uses, 2005



Data Source: Environment Canada

Retrofitting has become increasingly popular among British Columbians and Canadians alike. Programs, rebates and mandated building codes requiring the implementation of water-saving devices and appliances have played a role in the increased popularity of such fixtures in households across the province. The development of initiatives, such as the LiveSmartBC program and the recent "green-

ing" of the BC Building Code, aim at further encouraging the use of water-restricting appliances and different standards for housing components that are more energy efficient.⁸ However, it remains to be seen how much impact such initiatives will have on new and existing homes in future years.

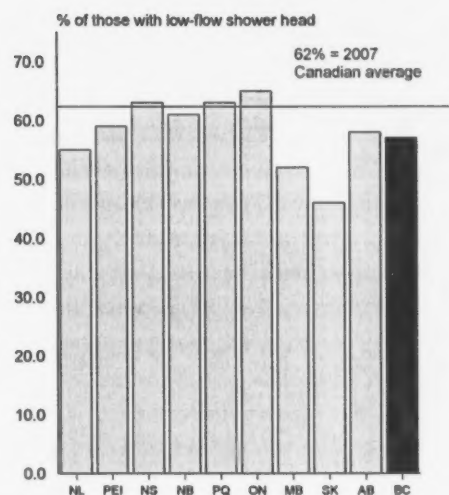
Low-flow shower heads use up to 70% less water than standard shower heads and can save a household up to 15% on the cost of heating water, since less fuel is required to heat a smaller volume of water.⁹ In 2007, well over half (57%) of BC residents reported utilizing low-flow shower head in their homes. This share was comparable to other Western provinces, but substantially less than most other regions and a full five percentage points below the national average (62%). Households in Ontario were the most likely to have one of these devices (65%). Meanwhile, being the only province with ownership under half (46%), Saskatchewan was the least likely.

⁸ For more information on government initiatives and water-smart building practices, see the *Government of British Columbia's water plan, Living Water Smart*: livingwatersmart.ca/watersmart/at_home.html#

⁹ Natural Resources Canada, 2008: oee.nrcan.gc.ca/residential/personal/new-homes/water-conservation.cfm?attr=4

⁷ Environment Canada, 2008. Freshwater Website: ec.gc.ca/water/en/info/pubs/brochure/e_IWDWW3.htm

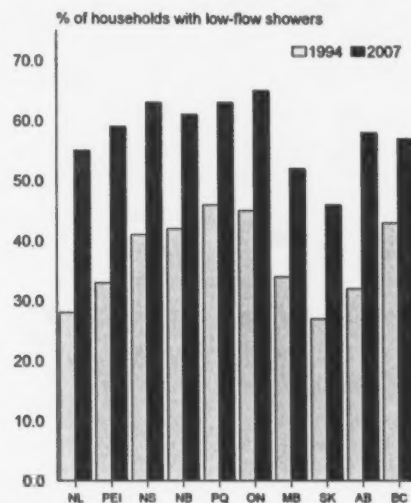
Households equipped with a low-flow shower, by province, 2007 (%)



Data Source: Statistics Canada

Despite the province's lower overall rate of adoption of low-flow shower heads, substantial improvements have been made over the past dozen years. In 1994, 43% of showers in BC households were low-flow; by 2007, this percentage had grown to 57%. With higher numbers seen in every province, the Canadian average (62% in 2007), also grew significantly over the same period (up 20 points from 1994), with increases in other provinces ranging from 17 percentage points in Quebec (from 9% in 1994 to 19% in 2007) to 27 percentage points in Newfoundland and Labrador (reaching 55% in 2007).

Households in the East are more likely to use water-saving shower heads

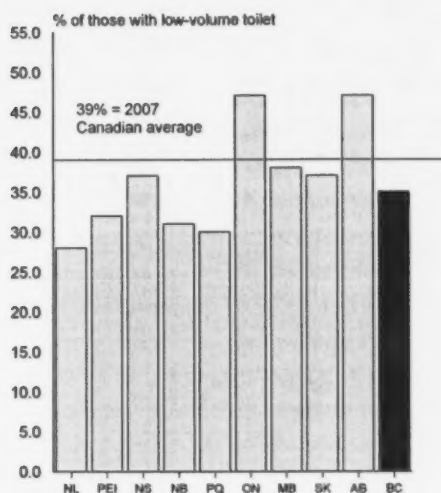


Data Source: Statistics Canada

Low-volume toilets can also considerably reduce the amount of water leaving the home. Installing a water-saving flush kit in your toilet is purported to save thousands of litres of water per year. Replacing an 18-litre-per-flush toilet with a six-litre flush model represents a 66% savings in water flushed, thereby cutting overall indoor water use by approximately 30%. The use of a lower-volume toilet can also mean a potential 50% reduction in a household's average water and sewage bill.¹⁰

¹⁰ Natural Resources Canada. Water Conservation Products: www.nrcan.gc.ca/residential/personal/water-conservation.cfm?attr=4

Households equipped with a low-volume toilet by province, 2007 (%)



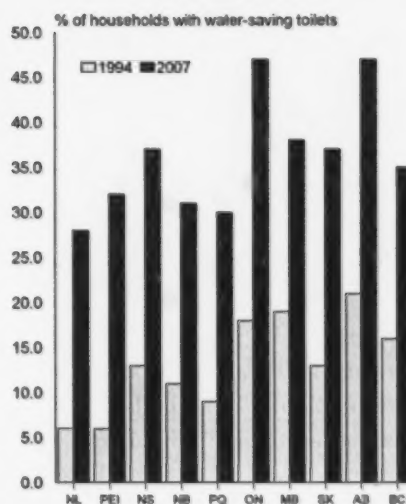
Data Source: Statistics Canada

While Eastern residences were more likely to use low-flow shower heads in 2007, they generally lagged the Western provinces when it came to the use of reduced-volume toilets. However, while Ontario was the exception in the East, BC was the Western anomaly to this pattern. Thirty-five percent of British Columbian households reported that they had a low-volume toilet in 2007, the lowest share in Western Canada. BC's reported presence of these types of toilets was low compared to its Western counterparts, but, with the exception of Nova Scotia (37% adoption rate), was higher than the Eastern provinces and just slightly below the national average (39%). On the highest end of the scale, 47% of households in Ontario and Alberta reported using these toilets, while Newfoundland and Labrador and Quebec trailed (28% and 30%, respectively).

Like low-flow shower heads, low-volume toilets have shown significant increase in popularity over the last decade or so. The share of British Columbian households equipped with such

devices in 2007 was notably higher than that recorded in 1994 (16%). Nationally, a similar picture emerged, as the percentage of houses with low-flow shower heads jumped from 15% to 39% over the same period, with Ontario seeing the biggest jump (from 18% of households reporting a low-volume toilet to 47% between 1994 and 2007). The rise in usage of water-saving fixtures in Ontario is likely attributable to regulatory changes to building codes making it mandatory to use such fixtures in all new buildings,¹¹ coupled with a boom of residential construction in recent years.¹²

Households with a water-saving toilets, by province, 1994 and 2007



Data Source: Statistics Canada

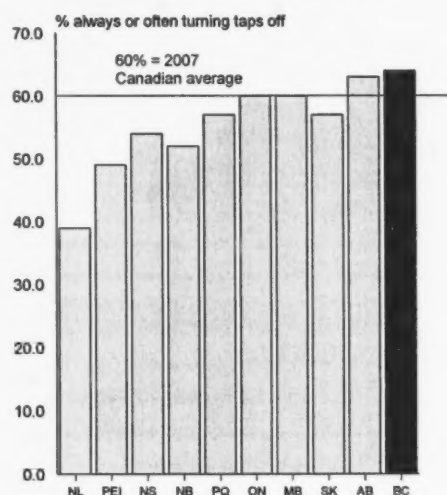
Water conservation can come in forms other than appliance adaptation. Simple, non device-related habits can also contribute substantially to residential water conservation. An example of one such measure is turning the water off

¹¹ City of Toronto, 2002, Toronto's Water Efficiency Plan: toronto.ca/watereff/plan.htm

¹² Canada Mortgage and Housing Corporation (CMHC), housing starts index.

while brushing one's teeth. Most (64%) BC households reported that at least someone in the home always or often turned the taps off while brushing in 2007. In fact, British Columbians were the more likely to save water by this means than those in any other province, scoring well above the Canadian average (60%).

Households in BC are the most likely to conserve water while brushing teeth, 2007 (%)



Data Source: Statistics Canada

Metered versus non-metered homes

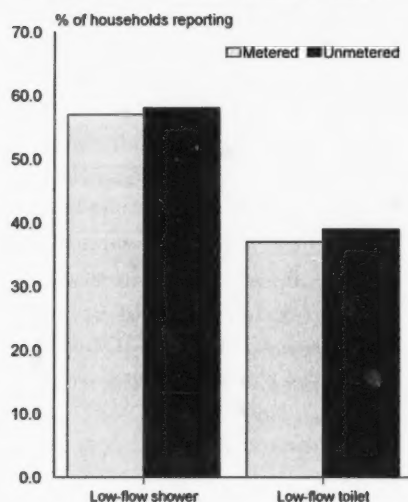
Many municipalities use water meters to monitor the volume of water use by households and bill the usage accordingly. The presence of such meters varies across the country, ranging from a mere four percent in Newfoundland & Labrador to 92% in Manitoba. In BC, approximately 41% of residences are metered, below the national rate (61%) and well below those of the other Western provinces. Many factors could potentially contribute to the variability of metered households among the provinces, including commonality of dwelling type. For example, Quebec has the highest proportion of apartments in the nation (46% of households in 2006, compared to 32% Canada-wide) and the

fact that water-conserving devices are less common in such dwellings inevitably contributes to that province's lower likelihood of metering (20% of households in 2006, compared to 61% nation-wide).

One would consider it a fair assumption that residences that are hooked up to municipal metering systems that monitor household water use would be more inclined to make use of water-saving devices in the home. In fact, Environment Canada reports that in 2004, Canadians paying flat-rates for water used over 75% more water than those who were charged by volume.¹³ However, this logic does not always appear to be the case when it comes to use of indoor water-conserving devices around the home. In 2006, Canadian households whose water is metered were more likely to use reduced volume toilets (42% compared to 36% for non-metered homes), but this was surprisingly not the case for low-flow shower heads (58% for metered versus, 63% for non-metered). In BC's case, of the households that were metered in 2006, 57% had low-flow shower heads, slightly less than among non-metered homes (58%). The same was true for use of low-volume toilets in the province (37% of metered households, compared to 39% of those without water meters).

¹³ Environment Canada, 2008. *2007 Municipal Water Use Report*. Available at: ec.gc.ca/water/en/info/pubs/sss/e_mun2004.htm

Unmetered households in BC are more likely to use indoor water conservation devices, 2006



Data Source: Statistics Canada

Some social components contributing to water-saving practices

Geography is not the only determining factor that comes into play in terms of conservation practices for water in private households; there are also social dimensions. Individual choice is also a notable factor in determining whether or not to make use of water-saving fixtures in one's household and, not surprisingly, people of certain demographics are more likely than others to do so.

Home owners are among those most apt to use such devices in Canada. For example, in 2006, almost two thirds (63%) of households occupied by the owner were equipped with low-flow showerheads, compared to less than half (45%) of rental properties.¹⁴ Since tenants are often not responsible for household water bills, there is less incentive for them to be inclined to request low-flow water devices. That being

said, landlords who *are* responsible for the water bills on their rental homes have more incentive to install these mechanisms. This could account for the fact that the use of water-saving devices has been on the rise among both types of households.

Household income is also an important social factor to consider. Compared to those in the highest income quintile, significantly more households of lower income rent their homes. It follows that usage of water-conserving devices varies significantly across income groups. Among Canadian households (regardless of ownership status) in 2006, those with annual incomes lower than \$25,000 were substantially less likely to use both low-flow showers (52%) and low-volume toilets (33%) than those with incomes exceeding \$75,000 per annum (65% and 45%, respectively).

Similarly, the presence of water-saving fixtures is more common in single-detached dwellings than in apartments. In fact, 63% of homes in single-detached dwellings used low-flow shower heads in 2006, compared to just 42% of those in apartments.

These indicators are irrefutably linked, especially considering the rate of home ownership for single-detached dwellings (92%) far exceeds that of apartments (28%).¹⁵ Despite the disparity with regard to income, ownership status and structural type of dwelling, the likelihood of adopting water conserving devices has been on the rise among every group and all types of dwellings.

¹⁴ Statistics Canada, Households and the Environment Survey, 2006.

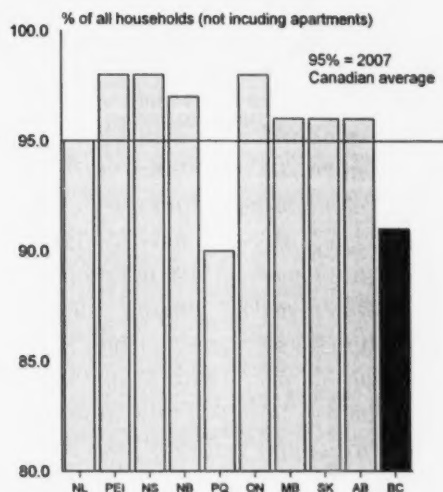
¹⁵ Statistics Canada, 2008. *Who uses water-saving fixtures in the home?* EnviroStats, Cat.#16-002-XIE

Outdoor watering

Of course, to realize full water-saving potential, residents also turn to water use outside the household structure. Outdoor gardening and the water needed to maintain outdoor living spaces makes up a considerable share of overall household water use. In fact, domestic water consumption can increase by up to 50% in the summer months, when people water their lawns and gardens.¹⁶ Lawn and garden watering practices can vary significantly from region to region, with likely influential factors including climate, dwelling types, laws and even cultural influence.

Of those British Columbian households that were not apartments in 2007, 91% had a lawn or a garden. Although that makes for a rather green-sounding province, BC falls below the national average of 95%, and even more notably below its fellow Western provinces in this measure.

BC households are among the least likely to have a lawn or garden, 2007 (%)



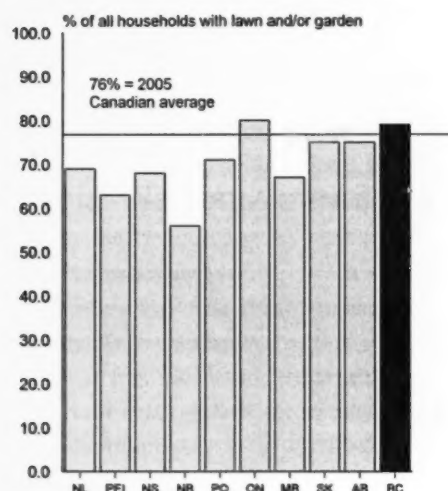
Data Source: Statistics Canada

However, of those households in the province that *do* have a garden, owners appear to be quite reluctant to let them go thirsty. Over three-quarters (79%) of BC households watered their lawns and gardens in 2005 (the latest year for which data is available), a rate second only to Ontario (80%) and the only other province to score above the national average (76%). Nearly two out of three households in the province watered their lawns, while an even higher proportion watered their gardens (83%).

Although there is little variability with regard to garden watering, the country's regions vary distinctly in lawn watering patterns. For example, in 2005, fewer than two in ten (18%) households watered their lawns in PEI, while on the other side of the country, more than six in ten homes with lawns watered them (61% in BC and Saskatchewan and 64% in Alberta).

¹⁶ Environment Canada, 2003.

BC households are among the most likely to water their lawn or garden, 2005 (%)



Data Source: Statistics Canada

Although British Columbians are avid outdoor water users, they are also leaders in conserving that water through the use of specific devices. Timed sprinklers are the most common apparatus used by many Canadian households to regulate the use of water in the yard. British Columbian households are the most likely in the country to reduce lawn and garden water use by using water sprinkler timers. In 2005, over a third (35%) of BC households that watered their lawn or garden made use of a sprinkler timer, the highest rate in the country. This could be attributable to several factors, including the province's promotion of water conservation,¹⁷ municipal regulations,¹⁸ convenience and personal choice. Quebec (26%) was the only

other province where the use of sprinkler timers was more common than the average Canadian household (23%). Although BC excelled in the use of this particular device, some provinces, like Alberta, use other effective conservation tactics, such as rainwater collection. Other methods of use for water conservation include watering at optimal times, such as the early morning, when evaporation is less substantial.¹⁹

What's Next?

Freshwater is vast and abundant in Canada. The nation has the largest supply among industrialized countries, seven percent of the world's renewable water flow (with less than 0.5% of its population).²⁰ Despite its abundance, many parts of the country still struggle with water availability. Canadians are also large consumers of water, ranking 28th out of 29 industrialized nations in per capita consumption in 2001.²¹ It is clear that Canada is in a prime position to have a significant impact on water supply and quality on local, provincial, national and even global scales. Residential water use can play a substantive role in the direction in which we are headed.

While the picture painted by household water use in BC is varied, it does reflect an overall positive pattern with respect to strengthening water conservation practices. Nationally, there are also some marked differences seen from

¹⁷ See the BC Ministry of Environment's *Water Stewardship Division Water Conservation Strategy*: env.gov.bc.ca/wsd/plan_protect_sustain/water_conservation/wtr_cons_strategy/toc.html

¹⁸ For an example of municipal water restrictions in one of the province's regions, see: *Watering Restriction in the Capital Region District* crd.bc.ca/water/conservation/outdoorwateruse/bylaw.htm

¹⁹ Environment Canada estimates that more than 50% of the water applied to lawns and gardens is lost due to evaporation, or run-off because of over-watering. For more information, see: ec.gc.ca/water/en/info/pubs/FS/e_FSA6.htm

²⁰ Statistics Canada, 2003, *Water in Canada. Human Activity and the Environment*. Cat. # 16-201-XIE

²¹ The University of Victoria, 2001. *Canada versus the OECD: An Environmental Comparison*. environmentalindicators.com

East to West, reflecting the diverse nature of how Canadians live. The more economical and feasible it becomes to replace older, water-heavy appliances and the more aware householders become of smart residential water use, the more progress will be made. Private households in British Columbia and across the country appear to be well situated to face the water-related environmental challenges that are present now and those that will inevitably present themselves in the future.

Table 1
Indoor water conservation, by province, 2007

	Households with a low-volume toilet ¹	Households with a low-flow shower head ¹	Member of household turned off water while brushing teeth ¹		
			Always or often	Sometimes or rarely	Never
Canada	39	62	60	25	13
Newfoundland & Labrador	28	55	39	36	24
Prince Edward Island	32	59	49	30	20
Nova Scotia	37	63	54	28	17
New Brunswick	31	61	52	28	18
Quebec	30	63	57	26	15
Ontario	47	65	60	25	12
Manitoba	38	52	60	22	15
Saskatchewan	37	46	57	26	15
Alberta	47	58	63	25	10
British Columbia	35	57	64	23	11

Notes:

1 As a percentage of all households

Note: totals may not add to 100 due to unclassified responses such as "do not know" and "other"

Data Source: Statistics Canada, Households and the Environment Survey, 2007

Table 2
Indoor water conservation devices, by province, 1994 and 2007 (%)

	Used a water-saving showerhead ¹		Used a water-saving toilet ¹	
	1994	2007	1994	2007
Canada	42	62	15	39
Newfoundland & Labrador	28	55	6	28
Prince Edward Island	33	59	6	32
Nova Scotia	41	63	13	37
New Brunswick	42	61	11	31
Quebec	46	63	9	30
Ontario	45	65	18	47
Manitoba	34	52	19	38
Saskatchewan	27	46	13	37
Alberta	32	58	21	47
British Columbia	43	57	16	35

Notes:

1 As a percentage of all households

Data Source: Statistics Canada, Households and the Environment Survey, 1994 and 2007

Table 3**Households using conservation devices, by presence of water meter, 2006 (%)**

	Households with water meters			Households without water meters		
	Households with meters ¹	Used water-saving showerhead ²	Used water-saving toilet ²	Households without meters ¹	Used water-saving showerhead ³	Used water-saving toilet ³
Canada	61.0	58.0	42.0	34.0	63.0	36.0
Newfoundland & Labrador	4.0	n/a	n/a	92.0	60.0	29.0
Prince Edward Island	n/a	n/a	n/a	79.0	57.0	31.0
Nova Scotia	82.0	58.0	35.0	13.0	58.0	n/a
New Brunswick	47.0	54.0	33.0	48.0	60.0	27.0
Quebec	20.0	54.0	29.0	77.0	68.0	35.0
Ontario	82.0	64.0	46.0	13.0	61.0	40.0
Manitoba	92.0	50.0	39.0	6.0	43.0	36.0
Saskatchewan	91.0	40.0	36.0	7.0	n/a	n/a
Alberta	84.0	51.0	44.0	11.0	56.0	36.0
British Columbia	41.0	57.0	37.0	47.0	58.0	39.0

Notes:

1. As a percentage of all households that did not reside in an apartment and whose main water is supplied by the city, town or municipality

2. As a percentage of households with meters

3. As a percentage of households without meters

n/a: data not available and/or too small and unreliable to publish

Data Source: Statistics Canada, Households and the Environment Survey, 2006

Table 4**Income and indoor water conservation fixture use, Canada, 2006 (%)**

	Households using devices ¹	
	Low-flow shower heads	Reduced volume toilets
Less than \$25,000	52.0	33.0
\$25,000 to \$75,000	57.0	35.0
Greater than \$75,000	65.0	45.0

1. As a percentage of all households in given income quintiles

Data Source: Statistics Canada, Households and the Environment Survey, 2006

Table 5**Home ownership and conservation fixture use, Canada, 2006 (%)**

	Households using devices ¹	
	Low-flow shower heads	Reduced volume toilets
Owned	63.0	43.0
Rented	45.0	23.0

1. As a percentage of all households by ownership status

Data Source: Statistics Canada, Households and the Environment Survey, 2006

Table 6
Households with a lawn or garden, 2007

	% of households with lawn and/or garden in 2007
Canada	95
Newfoundland & Labrador	95
Prince Edward Island	98
Nova Scotia	98
New Brunswick	97
Quebec	90
Ontario	98
Manitoba	96
Saskatchewan	96
Alberta	96
British Columbia	91

Notes:

1 As a percentage of all households that did not live in an apartment

Data Source: Statistics Canada, Household and the Environment Survey, 2007

Table 7
Outdoor water use, by province, 2005¹

	Households that watered their lawn and/or garden²	Households that watered their lawn³	Households that watered their garden⁴	Households that used a sprinkler timer⁵
Canada	76	54	81	23
Newfoundland & Labrador	69	54	72	n/a
Prince Edward Island	63	18	77	n/a
Nova Scotia	68	36	79	14
New Brunswick	56	20	72	n/a
Quebec	71	40	81	26
Ontario	80	61	84	21
Manitoba	67	44	70	13
Saskatchewan	75	61	74	16
Alberta	75	64	78	21
British Columbia	79	61	83	35

Notes:

1. Latest year for which data is available

2. As a percentage of households with a lawn or garden

3. As a percentage of households with lawns

4. As a percentage of households with gardens

5. Includes only households that reported having a lawn or garden that was watered in the summer of 2005. Does not include residents of apartment buildings.

n/a: data not available and/or too small and unreliable to publish

Data Source: Statistics Canada, Household and the Environment Survey, 2006